

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: OBIOL, RAMON SERRA

SERIAL NO.: 09/463,914

ART UNIT: 3724

FILED: February 1, 2000

EXAMINER: Flores Sanchez, O.

TITLE: SYSTEM FOR FIXING ROTARY CUTTING DIES IN MACHINES FOR DIE CUTTING  
LAMINAR MATERIAL

AMENDMENT "D"

Director of the U.S. Patent  
and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Office Action of January 13, 2005, a response being due with a Request  
for Continued Examination by April 13, 2005, please consider the following remarks:

REMARKS

Upon entry of the present amendments, Claims 33 - 41 have been canceled and new Claims  
42 - 49 substituted therefor. Reconsideration of the rejections, in light of the forgoing amendments  
and present remarks, is respectfully requested. The present amendments have been entered for the  
purpose of distinguishing the present invention from the prior art combination.

In the Office Action, it was indicated that Claims 33 - 35, 37 and 39 - 41 were rejected under  
35 U.S.C. § 103(a) as being obvious over the Harrison patent in view of the Katz patent. Claims 36

and 38 were rejected under 35 U.S.C. §103(a) as being obvious over the Harrison patent in view of the Katz patent.

As an overview to the present reply, Applicant has amended the language of previous independent Claim 33 in the form of new independent Claim 42. New independent Claim 42 incorporates the limitations of previous independent Claim 33, along with the limitations of previous dependent Claim 39. Additionally, language has been added to independent Claim 42 to indicate that the working means “comprises a plurality of fluid dynamic cylinders acting independently in the two 180° halves of the cutting die support cylinder.” Such language is intended to conform the language of independent Claim 42 with the language of the allowed claims in the corresponding European Patent and to conform with language found in the specification. On page 3, lines 18 - 22 of the original specification, it is indicated that:

According to their performance, the dynamic fluid cylinders are pneumatic or hydraulic cylinders and also preferred the working devices are dynamic fluid cylinders that operate independent of the two halves of the cutting die support cylinder.

Language has been added to independent Claim 42, reflecting the limitations of previous dependent Claim 39, that the fluid dynamic cylinders have “a spring cooperative with the bolt such that the bolt remains in the retracted position when the bolt is obstructed from moving the to the extended position.”

Relative to the prior art Harrison and Katz patents, Applicant notes that the Harrison patent is in a field of invention related to that of the present invention. In particular, the Harrison patent describes a cylindrical cutting die support which has a cutting die fastened thereto. In the Harrison patent, a plurality of valve-actuated vacuum nozzles are arranged around the periphery of the cutting

die support cylinder. A vacuum is applied to these ports so that when the cutting die is applied to the periphery of the cutting die support cylinder, the vacuum will retain the die in a proper position.

As was stated in the Abstract of the Harrison patent:

During operation the die is held in position by the vacuum. Beam sensors and light reflectors may be incorporated to sense when a wrong die is present and shut down the apparatus. Ball valve members may be incorporated into the surface of die to distribute the vacuum and also to enable die to be rolled along the surface of the die cylinder while initially be positioned.

As such, instead of using the bolt and the slotted hole arrangement of the present invention, the Harrison patent has adopted an entirely different approach. The Harrison patent relies virtually entirely on the vacuum condition and, in no way, contemplates the use of spring-mounted, fluid-dynamic cylinders for the purposes of causing the die to be engaged upon the cylinder.

The Katz patent, on the other hand, discloses a different field of technology. The Katz patent describes a fast exchange clamping device for use with cutting tools. This was recited in column 2, lines 1 - 15 of the Katz patent, as follows:

The fast exchange clamping device according to the invention is particularly well suitable for tool operating in a chipless and chip-removing manner for manufacturing wood, synthetic material, metal and stone. In particular, when employing mechanical springs even in the case of failure of the energy supply, the clamping of the tool will be safely maintained. The clamping device is, when machining wood, particularly suitable for devices which machine the edges, for dividing devices as well as for the combination of tools. The clamping device according to the invention is, however, also suitable for a fast exchange of grinding bodies on tool grinding devices. Furthermore, the clamping device may be employed for chucking the separating disks for the machining of stones.

In order to accomplish this purpose, the Katz patent does provide a fluid dynamic spring-mounted bolt which is moveable between a retracted position and an extended position. When the pneumatic

valve is operated, the bolts will extend outwardly of the machine spindle. As a result, the tool can be rotated such that the slots are separated from the bolts. The bolts will extend outwardly so that a new tool can be placed thereon in a quick and efficient manner. The cylinder is then actuated to retract the bolt so as to secure the machining disk onto the machine spindle.

Fundamentally, Applicant's attorney respectfully contends that one having ordinary skill in the art of the Harrison patent would not turn to the teachings of the Katz patent except for a hindsight reconstruction of the present invention. The Harrison patent does not utilize bolts for the securing of the cutting die to the cutting cylinder. The Harrison patent relies solely upon the application of vacuum conditions. Additionally, since the Katz patent is directed to the quick removal of machining disks, it is difficult to see how one would incorporate the structure of the Katz patent into the cutting die support cylinder of the Harrison patent in any way. The Katz patent is simply from a different field of the machining arts from that of the Harrison patent. The Harrison patent is designed for the forming of paperboard sheets. The Katz patent is for the machining of wood, metal and stone. On this basis, Applicant respectfully contends that the teachings of the Harrison patent would not cause one with ordinary skill of the art to look for technology associated with the machining arts. Applicant respectfully contends the combination of these references are merely a hindsight analysis and, hence, should not make obvious the teachings of the present invention.

Secondly, relative to the present claims, Applicant notes that there would be no teaching in the prior art combination to suggest that the fluid dynamic cylinders act independently in "two 180° halves" of the cutting die support cylinder. Quite clearly, in the Katz patent, each of the bolt-supporting fluid-dynamic cylinders must operate in concert so that each of the bolts extends outwardly simultaneously in a coordinated manner. There would be no reason to make the operation

independent of each other. Secondly, there is no teaching in either of the Harrison or Katz patents that the bolt remains in the retracted position when the bolt is obstructed from moving from the extended position. Fundamentally, for the Katz patent to operate properly, all of the bolts must be extended so as to allow for the attachment or removal of the disk-shaped machining tool. The present invention allows for the retention of the bolt where the hole associated with the cutting die does not align with a particular bolt. As such, the present invention, as defined by independent Claim 42, describes a feature which is neither shown nor suggested in the prior art combination. On this basis, Applicant respectfully contends that the present invention is different in structure, function and in results achieved from the prior art combination.

Dependent Claims 43 - 47 correspond, respectively, to the limitations of previous dependent Claims 34 - 38. Dependent Claim 48 and 49 correspond, respectively, to the limitations of previous dependent Claims 40 and 41.

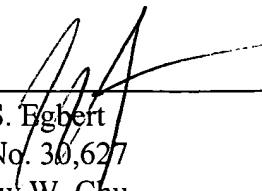
For the benefit of the Examiner, Applicant is attaching a copy of the issued European Patent relative to the priority document. Although Applicant's attorney realizes that the grant of the European Patent is not determinative of the grant of a corresponding U.S. patent, Applicant's attorney respectfully contends that an independent examining attorney has found the present invention, as defined by the independent Claim 42 herein to be patentably distinguishable from prior art references cited by the examining authority of Europe.

Based upon the foregoing analysis, Applicant contends that independent Claim 42 is now in proper condition for allowance. Additionally, those claims which are dependent upon Claim 42 should also be in condition for allowance. Reconsideration of the rejections and allowance of the

claims at an early date is earnestly solicited. Since no new claims have been added above those originally paid for, no an additional fee is required.

Respectfully submitted,

4-1-05  
Date

  
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**Europäisches  
Patentamt****European  
Patent Office****Office européen  
des brevets**

# Urkunde Certificate Certificat

Es wird hiermit bescheinigt, daß für die in der beigefügten Patentschrift beschriebene Erfindung ein europäisches Patent für die in der Patentschrift bezeichneten Vertragsstaaten erteilt worden ist.

It is hereby certified that a European patent has been granted in respect of the invention described in the annexed patent specification for the Contracting States designated in the specification.

Il est certifié qu'un brevet européen a été délivré pour l'invention décrite dans le fascicule de brevet ci-joint, pour les Etats contractants désignés dans le fascicule de brevet.

**Europäisches Patent Nr.**  
**1008425**

**European Patent No.**

**Brevet européen n°**

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Europäisches Patentamt

European Patent Office

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(11)

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(12)

**EUROPEAN PATENT SPECIFICATION**(45) Date of publication and mention  
of the grant of the patent:

07.05.2003 Bulletin 2003/19

(51) Int Cl.: **B26D 7/26, B26F 1/44**

(86) International application number:

**PCT/ES99/00157**(21) Application number: **99922193.0**

(87) International publication number:

**WO 99/062778 (09.12.1999 Gazette 1999/49)**(22) Date of filing: **28.05.1999**(54) **SYSTEM FOR FIXING ROTARY CUTTING DIES IN MACHINES FOR DIE CUTTING LAMINAR MATERIAL**ANORDNUNG ZUR BEFESTIGUNG EINES STANZWERKZEUGES IN EINER  
ROTATIONSSTANZMASCHINE FÜR LAMINIERTES MATERIALSYSTEME DE FIXATION DE MATRICES ROTATIVES DANS DES DECOUPEUSES DE MATERIAU  
STRATIFIE

(84) Designated Contracting States:

**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
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(56) References cited:

**ES-A1- 2 120 320****GB-A- 861 169****ES-A1- 2 130 912****US-A- 4 815 343**

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## Description

### OBJECT OF THE INVENTION

[0001] The present specification refers to a system for fixing rotating dies on die cutting machines of laminar material, whose object lies on being configured as a system permitting fixing the rotating dies on the die holder cylinders or surfaces on die cutting machines of laminar material.

### FIELD OF THE INVENTION

[0002] This invention, which is defined in claim 1, has its application within the industry dedicated to manufacturing die cutting machines, especially die cutting machines of laminar material.

### BACKGROUND OF THE INVENTION

[0003] In rotating die machines, the material to be cut, for example cardboard for manufacturing boxes, passes between a die holder cylinder and a counter-die cylinder or an anvil-die which also rotates, so that the die acts upon the counter-die and cuts or deforms the cardboard each time the cylinders turn.

[0004] To prevent the die from being damaged by the blow, the counter-die surface is provided with a polyurethane coating.

[0005] Currently, rotating dies are fixed on the die holder cylinder by means of screws coupled to the corresponding threaded holes in the surface of the die holder cylinder.

[0006] This fixing system has the main drawback of being excessively slow since there are a considerable number of screws to be placed.

[0007] That affirmed in the previous paragraph implies that the time the machine is stopped each time the new die should be assembled is excessive, which affects the productivity of the rotating die machine.

### DESCRIPTION OF THE INVENTION

[0008] The system for fixing the rotating dies on die cutting machines of laminar materials proposed by the invention is configured as being able to resolve said drawback, having other advantages as well that will be disclosed next.

[0009] The system for fixing the rotating dies on die cutting machines of laminar material object of the invention comprises fixing means between the die and the die holder cylinder, the fixing means having a plurality of bolts actuated by an actuating device.

[0010] This feature permits rapidly fixing the rotating die to the die holder cylinder, so that it is possible to achieve that the time the machine is stopped to change the die is less than it currently is, thus improving the die cutting machine's productivity.

[0011] The system of the invention also has the particularity that each one of the actuating devices is housed inside a hollow body fixed to the die holder cylinder.

5 [0012] Patent of Invention GB-A-8611 69, when which the preamble of claim 1 is based, discloses a SYSTEM FOR FIXING A ROTATING CUTTING DIE ON MACHINES FOR CUTTING WITH DIE OF LAMINAR MATERIAL, including a fixing means for the cutting die and  
10 a cutting die support cylinder or surface around which the cutting die is arranged, the type of cutting die used is not described in that invention, however it discusses an application of the invention in which a cutting die can be arranged around the cylinder.

15 [0013] In that invention, the housing for the actuating device on a hollow body fixed to the cylinder is not described, nor does it describe the existence of bolts fixing the die to the die holder cylinder in the area of largest diameter, nor the features of the actuating devices and  
20 additional elements.

[0014] As a result of this feature, the costs of manufacturing the die cutting machine are not excessively high, thus also allowing an easy and flexible maintenance and machining.

25 [0015] The actuating devices are also preferably fluid dynamic cylinders independently acting in the two halves of the die holder cylinder.

[0016] According to its embodiment, the fluid dynamic cylinders are pneumatic or hydraulic cylinders, and the  
30 actuating devices are also preferably fluid dynamic cylinders independently acting in the two halves of the die holder cylinder.

[0017] Also according to its embodiment, the fluid dynamic cylinders are pneumatic or hydraulic cylinders. It  
35 should be noted that also preferably, the bolts are quincuncially placed on the rotating die, so that it is possible to achieve that the bolts uniformly occupy the entire surface of the die.

[0018] According to an embodiment, the system of the  
40 invention also comprises threaded drills to fix the rotating die to the die holder cylinder, these threaded drills being placed in order to secure the fixing of the rotating die to the die holder cylinder in case of not using the system object of the invention.

45 [0019] Preferably, the drills are also quincuncially placed on the die holder cylinder, occupying the locations not used by the bolts.

### DESCRIPTION OF THE DRAWINGS

50 [0020] To complement the description being carried out and with the object of helping to better understand the features of the invention, a set of plans accompany the present specification as an integral part thereof, with  
55 an illustrative and non-limiting character, showing the following:

Figure 1 shows an elevational cross-sectional view

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of an actuating device.

Figure 2 shows a perspective view of a die placed on a die holder cylinder.

Figure 3 shows a detailed view of the system of centering the die on the die holder cylinder.

Figure 4 shows a fixing hole of the die.

Figures 5, 6, 7 and 8 show elevational cross-sectional views of the four working positions of the actuating device in relation to the system for fixing rotating dies on die cutting machines of laminar material object of the invention.

### PREFERRED EMBODIMENT OF THE INVENTION

[0021] In view of these drawings, it is possible to see how the system for fixing rotating dies on die cutting machines of laminar material is constituted as from rotating dies (1) fixed to die holder cylinders (2), comprising a plurality of bolts (3) actuated by a pneumatic cylinder (5).

[0022] The bolts (3) are fixed to the piston (6) of the pneumatic cylinder (5) with a lock nut (4), and at its head (7), they comprise an area of larger diameter fixing the die (1) to the die holder cylinder (2).

[0023] The pneumatic cylinders (5) are housed inside the respective hollow bodies (8), and each one of these hollow bodies (8) is fixed to the die holder cylinder (2) by means of four lock screws (10).

[0024] As can be seen in figure 2, the bolts (3) are quincuncially placed on the die holder cylinders (2) and on the rotating die (1), so that they uniformly occupy the entire surface of the die (1).

[0025] Figure number 3 shows that in order to facilitate centering the die (1) on the die holder cylinder (2), the latter has a circumferential butt (19) and an axial butt (20) to center the die (1), while the die (1) has a centering reglet (21).

[0026] The fixing system can also comprise threaded drills (22) to fix the rotating die (1) to the die holder cylinder (2), and in this case, the threaded drills (22) are also quincuncially placed on the die holder cylinder (2) and on the rotating die (1), occupying the locations not previously occupied by the bolts (3).

[0027] On the bottom of each pneumatic cylinder (5) an orifice (11) is made connected to a conduit (12) for injecting compressed air, and in the case that the bolt (3) does not find any outlet hole (15) in the die (1), the system of the invention has a hollow piston (6) with a spring (14) inside that gives way and allows the bolt (3) to remain hidden inside the piston (6), and in a recess (18) that the cover (9) of the pneumatic cylinder has, said cover (9) being fixed to the die (1) with the same screws (10) as the hollow body (8).

[0028] The holes (15) of the die (1) are provided with a swivel (16) provided with a recess (17) with the shape

of the bolt's (3) head (7).

[0029] In figure number 5, the different working phases of the actuating devices can be seen.

[0030] The previously mentioned phases of the actuating devices are the following, namely:

Phase one.- The pneumatic cylinder (figure number 5) has no air pressure, so that the spring (13) pushes the bolt (3) towards the inside of the hollow body (8). The die (1) is placed on the die holder cylinder (2), butting the circumferential butt (19) and the centering axial butt (20) of the die holder cylinder (2).

Phase two.- As shown in figures 6 and 7, the pneumatic cylinder receives the compressed air through an orifice (11) carried out on the bottom of the pneumatic cylinder (5), connected to a conduit (12), upwardly pushing this compressed air to the piston (6) and also the bolt (3), thus overcoming the stress of the spring (13) as shown in figure number 7.

In case that the bolt (3) outlet were obstructed, the compressed air would continue to overcome the stress of the spring (13), thus keeping the piston up, but the bolt (3) would remain housed inside the piston (6) exerting a small pressure produced by the spring (14) on the die (1), as shown in figure number 6.

Phase 3.- In this phase, the die (1) has to axially shift towards the position of the swivel (16), for then immediately removing the compressed air from inside the pneumatic cylinder, thus obtaining the spring's (13) action and thus shifting the piston (6) and the bolt (3) towards the inside of the die holder cylinder (2), thus fixing the bolt's (3) head (7) and the die (1) to the die holder cylinder (2), as shown in figure number 8.

### Claims

1. A system for fixing rotating dies on die cutting machines of laminar material, comprising fixing means of the die (1) and a die holder cylinder or surface (2), around which the die (1) is arranged, the fixing means having a plurality of bolts (3) actuated by an actuating device (5) housed inside a hollow body (8) fixed to the die holder cylinder or surface (2), characterized in that the bolts (3) comprise an area of larger diameter (7) on their head fixing the die (1) to the die holder cylinder or surface (2), incorporating actuating devices (5) configured as fluid dynamic cylinders (5) in the case of a die holding cylinder (2), the fluid dynamic cylinders (5) acting independently in the two 180° halves of the die holder cylinder (2), the cylinders being fluid dynamic (5), pneumatic or hydraulic cylinders in the case of the

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die (1) being rotating.

2. A system for fixing rotating dies on die cutting machines of laminar material according to the first claim, **characterized in that** the bolts (3) are quincuncially placed on the rotating cylinder or on a flat surface.
3. A system for fixing rotating dies on die cutting machines of laminar material according to the first claim, **characterized in that** it is provided with threaded drills (22) to fix the rotating die (1) to the die holder cylinder (2).
4. A system for fixing rotating dies on die cutting machines of laminar material according to the previous claims, **characterized in that** the drills (22) are also quincuncially placed on the rotating die (1), occupying the locations not occupied by the bolts (3).
5. A system for fixing rotating dies on die cutting machines of laminar material according to the previous claims, **characterized in that** it has springs (13) and (14) acting on the bolt (3), the latter being located inside the hollow piston (6) when the outlet of the bolt (3) is obstructed by the die (1).
6. A system for fixing rotating dies on die cutting machines of laminar material according to the previous claims, **characterized in that** the die (1) is centered on the die holder cylinder (2).
7. A system for fixing rotating dies on die cutting machines of laminar material according to the previous claims, **characterized in that** it has a circumferential butt (19) and an axial butt (20) on the die holder cylinder, and a reglet (21) on the die (1) for centering it.
8. A system for fixing rotating dies on die cutting machines of laminar material according to the previous claims, **characterized in that** it has a hole (15) with a swivel (16) and a recess (17) carried out on the wood of the die so that after shifting the wood and removing the air from the pneumatic cylinder (5), the bolt's (3) head (7) fixes the die (1) against the die holder cylinder (2).

#### Patentansprüche

1. System für die Befestigung von rotierenden Stanzwerkzeugen an Stanzmaschinen für gewalztes Material, Befestigungsmitteln für das Stanzwerkzeug (1) und einen Stanzwerkzeughaltezyylinder bzw. -oberfläche (2) umfassend, um den herum das Stanzwerkzeug (1) angeordnet ist, wobei die Befestigungsmitteln eine Vielzahl von Bolzen (3) aufwei-

sen, die von einer Betätigungsvorrichtung (5) betätigt werden, die im Innern eines Hohlkörpers (8) untergebracht ist, der am Oberflächen-Stanzwerkzeughaltezyylinder (2) befestigt ist, **dadurch gekennzeichnet, dass** die Bolzen (3) am Kopf einen Bereich mit größerem Durchmesser (7) aufweisen, der das Stanzwerkzeug (1) am Oberflächen-Stanzwerkzeughaltezyylinder (2) befestigt, Betätigungsvorrichtungen (5) umfassend, die als Dynamikfluidzylinder ausgelegt sind, im Fall eines Stanzwerkzeughaltezyinders (2), agieren die Dynamikfluidzylinder (5) unabhängig von den beiden 180°-Hälften des Stanzwerkzeughaltezyinders (2), falls es sich um ein rotierendes Stanzwerkzeug (1) handelt, wobei es sich bei den Dynamikfluidzylindern (5) um pneumatische oder hydraulische Zylinder handelt.

2. System für die Befestigung von rotierenden Stanzwerkzeugen an Stanzmaschinen für gewalztes Material, gemäß des ersten Patentanspruches, **dadurch gekennzeichnet, dass** die Bolzen (3) auf dem Drehzylinder oder einer flachen Oberfläche versetzt angeordnet sind.
3. System für die Befestigung von rotierenden Stanzwerkzeugen an Stanzmaschinen für gewalztes Material, gemäß des ersten Patentanspruches, **dadurch gekennzeichnet, dass** es mit Gewindebohrungen (22) versehen ist, um das rotierende Stanzwerkzeug (1) am Stanzwerkzeughaltezyylinder (2) zu befestigen.
4. System für die Befestigung von rotierenden Stanzwerkzeugen an Stanzmaschinen für gewalztes Material, gemäß des fünften und sechsten Patentanspruches, **dadurch gekennzeichnet, dass** die Bohrungen (22) auch auf dem rotierenden Stanzwerkzeug (1) versetzt angebracht sind, wobei sie die nicht von den Bolzen (3) besetzten Stellen einnehmen.
5. System für die Befestigung von rotierenden Stanzwerkzeugen an Stanzmaschinen für gewalztes Material, gemäß den vorgenannten Patentansprüchen, **dadurch gekennzeichnet, dass** es mit Federn (13) und (14) ausgestattet ist, die auf den Bolzen (3) einwirken, so dass dieser im Inneren des hohlen Kolbens (6) verbleibt, wenn der Ausgang für den Bolzen (3) durch das Stanzwerkzeug (1) versperrt ist.
6. System für die Befestigung von rotierenden Stanzwerkzeugen an Maschinen für gewalztes Material, gemäß den vorgenannten Patentansprüchen, **dadurch gekennzeichnet, dass** das Stanzwerkzeug (1) in zentrierter Position über dem Stanzwerkzeughaltezyylinder (2) verbleibt.

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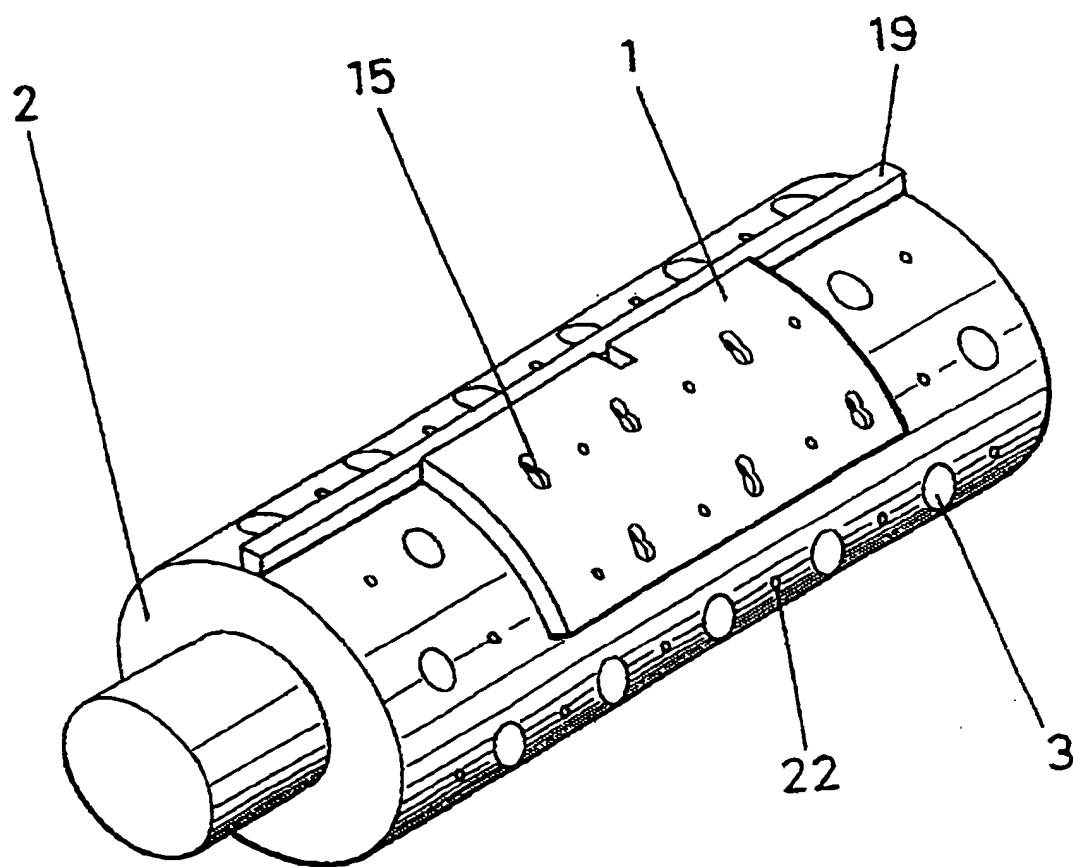
7. System für die Befestigung von rotierenden Stanzwerkzeugen an Maschinen für gewalztes Material, gemäß des neunten Patentanspruchs, **dadurch gekennzeichnet, dass** es über einen umlaufenden Anschlag (19) und einen axialen Anschlag (20) im Stanzwerkzeughaltezylinder (2), sowie über eine Nut (21) im Stanzwerkzeug (1) für dessen Zentrierung, verfügt.
8. System für die Befestigung von Stanzwerkzeugen an Stanzmaschinen für gewalztes Material, gemäß den vorgenannten Patentansprüchen, **dadurch gekennzeichnet, dass** es über eine Öffnung (15) mit einer Drehscheibe (16) und einem Umgußteil (17), im Holz des Stanzwerkzeugs, verfügt, damit der Kopf (7) des Bolzens (3) das Stanzwerkzeug (1) gegen den Stanzwerkzeughaltezylinder (2) befestigt, nachdem das Holz verschoben und die Luft aus dem Pneumatikzylinder verdrängt wurde.
4. Système pour le serrage d'outils à matricer rotatifs sur des presses à matricer de matériel lamellaire, selon la cinquième et la sixième revendication, **caractérisé en ce que** les alésages (22) son aussi disposés sur l'outil à matricer (1) en quinconce, en occupant les lieux non occupés par les boulons (3).
5. Système pour le serrage d'outils à matricer rotatifs sur des presses à matricer de matériel lamellaire, selon les revendications précédentes, **caractérisé en ce qu'il** est pourvu de ressorts (13) et (14) qui agissent sur le boulon (3), celui-ci demeurant situé à l'intérieur du piston creux (6), lorsque le boulon (3) trouve la sortie obstruée par l'outil à matricer (1).
6. Système pour le serrage d'outils à matricer rotatifs sur des presses à matricer de matériel lamellaire, selon les revendications précédentes, **caractérisé en ce que** l'outil à matricer (1) est centré sur le cylindre porte-outils à matricer (2).

### Revendications

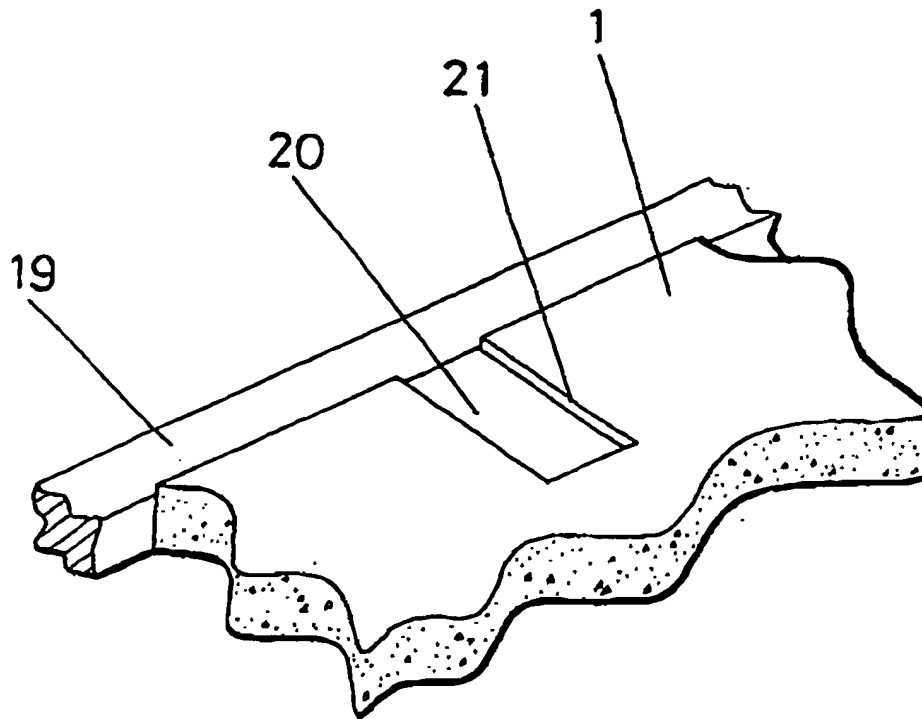
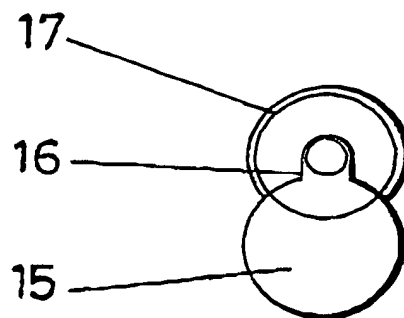
1. Système de serrage d'outil à matricer rotatifs sur des presses à matricer de matériel lamellaire, comprenant des moyens de serrage de l'outil à matricer (1) et un cylindre ou surface porte-outils à matricer (2) autour duquel est disposé l'outil à matricer (1), en présentant les moyens de serrage une pluralité de boulons (3) actionnés par un dispositif actionneur (5), logé à l'intérieur d'un corps creux (8) assujéti au cylindre porte-outils à matricer de surface (2), **caractérisé en ce que** les boulons (3) comprennent sur leur tête une zone de diamètre supérieure (7) qui assujettit l'outil à matricer (1) au cylindre porte-outils à matricer de surface (2), en incorporant des dispositifs actionneurs (5) configurés comme des cylindres fluide dynamiques, dans le cas d'un cylindre porte-outils à matricer (2), les cylindres fluide dynamique (5) agissent indépendamment des deux moitiés de 180° du cylindre porte-outils à matricer (2) dans le cas où l'outil à matricer (1) serait rotatif, les cylindres étant les cylindres fluide dynamiques (5), cylindres pneumatiques ou hydrauliques.
2. Système pour le serrage de porte-outils à matricer rotatif sur des presses à matricer de matériel lamellaire, selon la première revendication, **caractérisé en ce que** les boulons (3) son posés sur le cylindre rotatif ou une surface plane en quinconce.
3. Système pour le serrage d'outils à matricer rotatifs sur des presses à matricer de matériel lamellaire, selon la première revendication, **caractérisé en ce qu'il** est pourvu d'alésages filetés (22) pour assujettir l'outil à matricer rotatif (1) sur le cylindre porte-outils à matricer (2).
7. Système pour le serrage d'outils à matricer rotatifs sur des presses à matricer de matériel lamellaire, selon la neuvième revendication, **caractérisé en ce qu'il** est pourvu d'une butée circonférentielle (19) et une buté axial (20), sur le cylindre porte-outils à matricer (2), et une rigole (21) sur l'outil à matricer (1) pour son centrage.
8. Système pour le serrage d'outils à matricer rotatifs sur des presses à matricer de matériel lamellaire, selon les revendications précédentes, **caractérisé en ce qu'il** est pourvu d'un trou (15) ayant une coulisse (16) et une refonte (17) réalisée sur le bois de l'outil à matricer, pour qu'après avoir déplacé le bois et éliminé l'air du cylindre pneumatique (5) la tête (7) du boulon (3) assujettisse l'outil à matricer (1) contre le cylindre porte-outil à matricer (2).



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**FIG. 2**

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**FIG. 3****FIG. 4**

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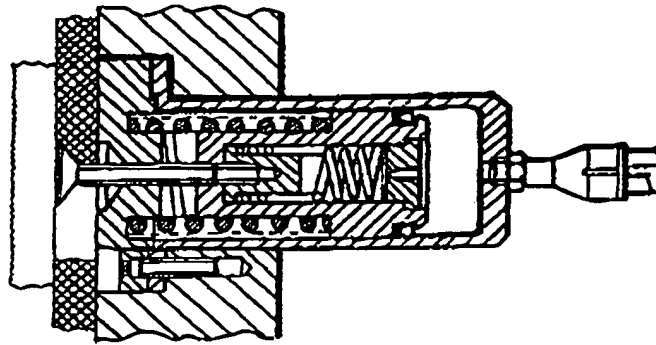


FIG. 8

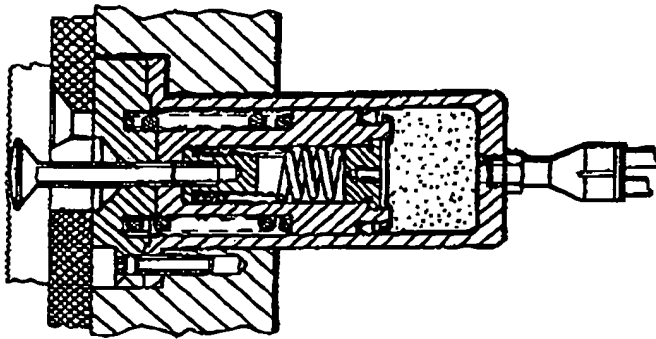


FIG. 7

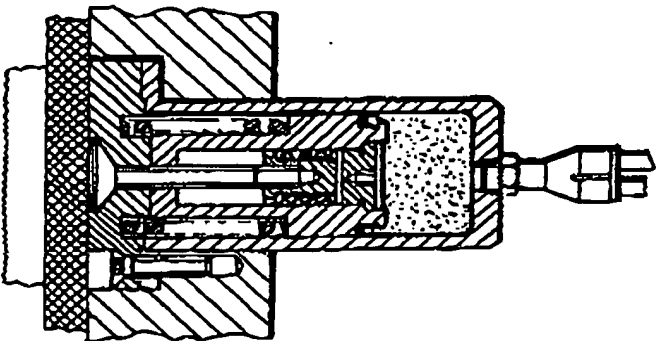


FIG. 6

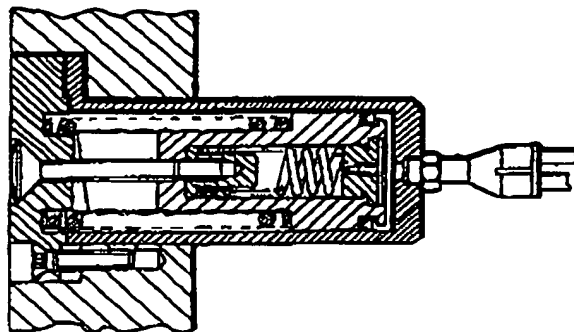


FIG. 5